

1. A Revision of the Fishes of the Genera *Sicydium* and *Lentipes*, with Descriptions of five new Species. By W. R. OGILVIE - GRANT. (Communicated by Dr. GÜNTHER, F.R.S., V.P.Z.S.)

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(Plates XI., XII.)

The fact that there are already as many as 19 species in the genus *Sicydium* (to which I have had to add 5) seems to justify an attempt to arrange the species into smaller groups, the members of which may be found to be allied together by some convenient and distinctive characters. Dr. Günther, in his British Museum Catalogue, divides this genus into two groups according as the anterior teeth are, or are not, enlarged in the lower jaw. Making a further use of the line of investigation which he here opened to us, I have taken advantage of the opportunity of examining the characters of the teeth in the specimens in the British Museum.

I find that the teeth of the upper jaw, when subjected to a magnifying power of some 200 diameters, are of one of four distinct forms, viz., unicuspid, bicuspid, and two kinds of tricuspid.

In the first group, or that in which the teeth are unicuspid, and of which *S. plumieri* may be taken as typical, the teeth (Plate XII. fig. 5) are simple, slender, with the distal half bent inwards at or nearly at right angles. In the second, or bicuspid group, as in *S. pugnans*, n. sp., the teeth (Plate XII. fig. 7) are curved inwards and have their extremities bilobed and shaped like the anterior part of a pig's hoof. In the third group, as an example of which a tooth of *S. gymnogaster*, n. sp., is figured (Plate XII. fig. 6), the teeth are tricuspid and trident-shaped, the lateral lobes long, the middle short and, as it were, suspended between the extremities of the former, so that it soon becomes worn away, and the tooth is then to all appearance bicuspid. I have not found these two last types of tooth in any as yet described species which I have had the opportunity of examining. In the fourth and last group, as in *S. tæniurum*, the teeth (Plate XII. fig. 8) are also tricuspid and trident-shaped; but all the lobes being of nearly equal length and strength, the teeth retain this shape until quite worn down.

SICYDIUM, C. & V.

Sicydium, Cuv. & Val. xii. p. 167; Günth. Cat. Fish. iii. p. 91 (part); Day, P. Linn. Soc. xiii. p. 140.

Sicydium et *Sicyopterus*, Gill. Proc. Ac. Nat. Sc. Philad. 1860, p. 101.

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Cotylophus, Guich., in Maillard Notes sur l'Isle de la Réunion, ii. Addenda C. p. 9.

Sicydium, *Sicyopterus* et *Microsicydium*, Bleeker, Arch. Néerl. ix. p. 313.

Sicyopterus, *Sicydiops* et *Microsicydium*, Bleeker, Versl. Ak. Amst. (2) ix. p. 271.

Body subcylindrical, covered with rather small ctenoid scales; head oblong and broad, with the cleft of the mouth nearly horizontal; upper jaw prominent; snout obtusely rounded; lips very thick, the lower with a series of numerous slender horizontal teeth, of which sometimes only the extremities are visible. Upper jaw with a single uniform series of numerous moveable small teeth attached by ligament to the edge of the maxilla; behind this outer visible series lie numerous other parallel series of young teeth hidden in the gum, which succeed the former as they become worn out or broken. Lower jaw with a series of widely set conical teeth. Eyes of moderate size. Two dorsal fins, the anterior with 6 (5 or 7) flexible spines; caudal quite free; ventrals united into a short cup-shaped disk. Gill-openings of moderate width; 4 branchiostegals; no air-bladder. Pseudobranchiæ a slit behind the fourth gill.

This genus, confined to fresh waters near the sea, is found throughout the Torrid Zone.

Synopsis of Species.

- I. Anterior mandibular teeth not larger than the following.
- A. Teeth in the upper jaw long, slender, and bent inwards at, or nearly at, right angles.
- a. Almost entirely hidden by the gum, dorsal spines produced into long ribands 1. *S. plumieri*.
- b. Cut the gum.
- a. Maxilla does not extend to the vertical from the posterior margin of the eye; dorsal spines produced into long narrow ribands 2. *S. antillarum*.
- β. Maxilla extends behind the vertical from the posterior margin of the eye; dorsal spines produced into short filaments 3. *S. brevifile*.
- B. Teeth in the upper jaw curved, tricuspid, trident-shaped, the middle cusp, which is suspended at the anterior extremity of the tooth, being very short, soon becomes worn away.
- a. Neck and belly naked 4. *S. gymnogaster*.
- b. Neck and belly covered with small scales 5. *S. salvini*.
- C. Teeth in the upper jaw curved, tricuspid, trident-shaped, all the lobes being of nearly equal length and strength.
- a. Head as broad as high; neck naked, uniform blackish, each scale with an oblong black spot. D. $6\frac{1}{10}$. A. $\frac{1}{10}$ 6. *S. acutipinne*.
- b. Height of the head two thirds of the width; scales on the neck and belly as large as the rest, uniform blackish; caudal white-edged. D. $6\frac{1}{11}$. A. $\frac{1}{10}$ 7. *S. laticeps**

* Specimens in which the teeth have not been examined.

II. Anterior mandibular teeth larger than the following.

- A. Teeth in the upper jaw bicuspid.
 a. Margin of the upper lip serrate 8. *S. pugnans*.
- B. Teeth in the upper jaw tricuspid.
 a. Scales subequal.
 α. First eight or ten rows on the occiput very small. Head four and a half in the length (without the caudal). Caudal with a dark horseshoe-like marginal band met by a second passing along the middle rays from the root. D. $6\frac{1}{11}$. A. $\frac{1}{10}$ 9. *S. tæniurum*.
 β. First two or three rows of scales on the occiput very small. Head five and a half in the length (without the caudal). Caudal with a dark horseshoe-like marginal band met by a second passing along the middle rays. D. $6\frac{1}{11}$. A. $\frac{1}{11}$ 10. *S. lagocephalum*.
 γ. Diameter of the eye is nearly equal to the interorbital space. D. $6\frac{1}{11}$. A. $\frac{1}{10}$ 11. *S. elegans**.
 δ. Diameter of the eye equals the interorbital space. The maxilla extends to the vertical from the middle of the eye. D. $\frac{1}{11-12}$. A. $\frac{1}{10-11}$ 12. *S. xanthurum**.
 ε. Head and anterior portion of the trunk scaleless. Diameter of the eye equals the interorbital space. D. $5-6\frac{1}{9-10}$. A. $\frac{1}{10-11}$ 13. *S. gymnanchen**.
 ζ. A broad white band from the tip of the snout to the root of the caudal, below which is a longitudinal row of large black spots 14. *S. albo-tæniatum**.
- b. Scales on the middle of the trunk larger or much larger than those on the anterior parts and tail.
 α. Upper lip with a slight median cleft; caudal much shorter than the head, with a black horseshoe-like marginal band met by a second passing along its middle rays; the diameter of the eye is one third of the interorbital space. D. $6\frac{1}{11}$. A. $\frac{1}{10}$. L. trans. 15 15. *S. micrurum*.
 β. Upper lip without median cleft; the last ray of the dorsal much produced, extending past the base of the caudal. Colour uniform black. D. $6\frac{1}{10}$. A. $\frac{1}{11}$. L. trans. 16 16. *S. nigrescens*.
 γ. Upper lip with a deep median cleft, and two round lateral notches below the nostrils. D. $6\frac{1}{10}$. A. $\frac{1}{10}$. L. trans. 13 ... 17. *S. stimpsoni*.
 δ. Upper lip with a slight median cleft; caudal longer than the head, olive with a yellow margin; diameter of the eye half the interorbital space; the maxilla extends to the vertical from the anterior

- margin of the eye. D. $6\frac{1}{10-11}$. A. $\frac{1}{10-11}$.
 L. trans. 17 18. *S. cynocephalum*.
- e. Caudal longer than the head, yellow with a broad violet band round the margin; diameter of eye about half the interorbital space; maxilla extends to the vertical from the middle of the eye. D. $6\frac{1}{10-11}$.
 A. $\frac{1}{10-11}$. L. trans. 14 19. *S. parvei**
- ζ. The caudal is as long as the head and has a black horse-shoe-like marginal band; diameter of the eye more than half the interorbital space. D. $6\frac{1}{11-12}$. A. $\frac{1}{10-11}$.
 L. trans. 14 20. *S. macrostetholepis**
- c. Scales on the neck and belly smaller than the rest, which are equal.
- α. Maxilla extends to the vertical from the middle of the eye. Colour reddish brown, with six transverse bands and scattered spots of darker. D. $6\frac{1}{10}$. A. 11. L. trans. 19..... 21. *S. fasciatum**
- β. Maxilla extends to the vertical from the anterior margin of the eye; caudal one and a half times the length of the head; colour deep violet with longitudinal series of yellow spots. D. $6\frac{1}{10-11}$. A. $\frac{1}{10-11}$. L. trans. 15 22. *S. microcephalum**
- γ. Maxilla does not extend to the vertical from the middle of the eye. Colour brownish, with eight or nine rings surrounding the body. D. $6\frac{1}{10}$. A. 11 23. *S. griseum**
- d. First dorsal with seven spines.
- α. Last ray of the dorsal only slightly produced into a short point; belly naked. D. $7\frac{1}{10}$. A. $\frac{1}{10}$ 24. *S. parvipinne**

Anterior mandibular teeth not larger than the following.

1. *SICYDIUM PLUMIERI*, Bl. (C. & V.). (Plate XI. fig. 1 et XII. fig. 5.)

Gobius plumieri, Bl. v. p. 125, pl. 178, fig. 3; Bl. Schn. p. 69; Lacép. ii. pp. 537 and 562, pl. 15, fig. 2.

Sicydium plumieri, Cuv. & Val. xii. p. 168; Gill, Proc. Ac. Nat. Sc. Philad. 1860, p. 101; Günth. Cat. Fish. iii. p. 92; Bleeker, Arch. Néerl. ix. p. 313.

D. $6\frac{1}{10}$. A. $\frac{1}{10}$. L. lat. ca. 84.

Teeth in the upper jaw long, slender, and bent inwards at about right angles; only the extremities cut the gum. A single row of inconspicuous papillæ on the gum beneath the upper lip, with a larger median papilla above the maxillary suture; a median cleft in

the upper lip. Only the extremities of the horizontal teeth visible. Maxillæ contain an obtuse angle. The total length of the body (without the caudal) is four times the length of the head; the width of the head is considerably greater than the height and nearly equal to the length; the height of the body is two ninths of the length. Scales small; those on the body and tail are subequal and larger than those on the neck and belly. The diameter of the eye is one seventh of the length of the head and one third of the interorbital space. The length of the pectoral is greater than that of the head. The third, fourth, and fifth dorsal spines are produced into long ribands; the fourth, which is the longest, is about twice the height of the body. Colour either uniform olive-brown, dorsals with irregular dark marking and anal with a dark marginal band, or yellowish marbled with brown.

The largest specimen measures nearly 7 inches.

Hab. West Indies.

Nine specimens, adult, half-grown and young.

2. SICYDIUM ANTILLARUM, sp. n. (Plate XII. fig. 3.)

D. $6\frac{1}{10}$. A. $\frac{1}{10}$. L. lat. 68.

Teeth in the upper jaw long, slender, and bent inwards over the gum at about right angles. A row of small lamelliform transverse papillæ on the gum beneath the upper lip, with a larger median lamelliform papilla above the maxillary suture; a slight median cleft in the upper lip; maxillæ at right angles to one another; horizontal teeth conspicuous.

The total length of the body (without the caudal) is four and three fifth times the length of the head; the width of the head is considerably greater than the height and two thirds of the length; the height of the body, which is equal to the width of the head, is one sixth of the length. Scales on the body and tail are subequal and larger than those on the neck and belly. The maxilla does not extend to the vertical from the posterior margin of the eye, the diameter of which is contained six and a half times in the length of the head and twice in the interorbital space. The length of the pectoral is greater than that of the head. The third, fourth, and fifth dorsal spines are produced into long narrow ribands; the fourth, which is longest, is nearly three times the height of the body; the second dorsal is considerably higher than the body. Colour uniform violet-brown, dorsal fins with irregular wavy dark markings; anal with a black and white marginal band; caudal with a dark band on the upper margin.

Total length $4\frac{3}{4}$ inches.

Hab. Barbadoes.

One adult specimen.

3. *SICYDIUM BREVIFILE*, sp. n. (Plate XII. fig. 1.)D. $6\frac{1}{10}$. A. $\frac{1}{10}$. L. lat. 64.

Teeth in the upper jaw long, slender, and bent inwards over the gum at right angles. No papillæ on the gum beneath the upper lip, but a small median papilla above the maxillary suture; upper lip with a slight median notch; maxillæ contain an angle of about 75° ; horizontal teeth conspicuous.

The total length of the body (without the caudal) is four and two fifth times the length of the head; the width of the head is greater than the height and two thirds of the length; the height of the body, which is greater than the width of the head, is contained five and a half times in the length. Scales on the body and tail are subequal, larger than those on the neck and belly. The maxilla extends behind the vertical from the posterior margin of the eye, the diameter of which is contained six and a half times in the length of the head and twice in the interorbital space. The length of the pectoral is less than that of the head. The second, third, fourth, and fifth dorsal spines are produced into short slender filaments; the fourth, which is the longest, is rather higher than the body; the second dorsal is not so high as the body. Colour, body and fins yellowish brown; the second dorsal marbled with darker; anal with a brown and white margin.

Total length $4\frac{1}{6}$ inches.

Hab. Cameroons.

One adult specimen.

4. *SICYDIUM GYMNOGASTER*, sp. n. (Plate XI. fig. 2 et XII. fig. 6.)D. $6\frac{1}{10}$. A. $\frac{1}{10}$. L. lat. 60-64.

Teeth in the upper jaw tricuspid; the middle cusp, which is situated at the anterior end of the tooth, is very short and soon becomes worn away.

A double or treble row of small papillæ on the gum beneath the upper lip, without a larger median papilla; upper lip with a very slight median notch; maxillæ contain an angle of about 75° ; horizontal teeth more or less inconspicuous.

The total length of the body (without the caudal) is four and a half to five times the length of the head; the height and width of the head are subequal and two thirds of the length. The height of the body is contained from five and a half to six times in the length. Scales strongly ctenoid; neck and belly naked. The diameter of the eye is one sixth of the length of the head and half the interorbital space. The length of the pectoral is greater than that of the head. The second, third, and fourth dorsal spines are produced into filaments; the third, which is the longest, is twice the height of the body; the second dorsal is higher than the body. Colour violet-brown, yellowish in young specimens, shaded with indistinct transverse bands of darker; an irregular brown spot on the axis of the pectoral, and a broad dark band from the base of the pectoral to the

root of the caudal, both more or less indistinct in adult specimens. Fins violet, clouded with darker.

The largest specimen measured $4\frac{3}{4}$ inches.

Hab. Mazatlan.

Six specimens—adult, half-grown, and young.

5. *SICYDIUM SALVINI*, sp. n. (Plate XII. fig. 2.)

D. $6\frac{9}{10}$. A. $\frac{1}{10}$. L. lat. 78.

Teeth in the upper jaw tricuspid; the middle cusp, which is situated at the anterior end of the tooth, is very short and soon becomes worn away.

Gum beneath the upper lip smooth; a median papillose tubercle above the maxillary suture; upper lip with a small median notch; maxillæ contain an angle of about 75° ; horizontal teeth conspicuous.

The total length of the body (without the caudal) is four and three quarter times the length of the head; the width of the head is greater than the height and three quarters of the length. The height of the body is contained six and a quarter times in the length. Scales ctenoid, those on the neck and belly smaller than those on the body and tail. The diameter of the eye is contained five and a half times in the length of the head and twice in the interorbital space. The length of the pectoral is rather greater than that of the head. The second and third dorsal spines are subequal and produced into short filaments, one and a half times the height of the body; second dorsal not so high as the body. Colour olive-brown; anal yellow, with a black and white band along the margin; membrane of the second dorsal clear spotted with brown; caudal with a dark and yellow band round the extremity.

Total length $4\frac{2}{3}$ inches.

Hab. Panama.

One adult specimen.

6. *SICYDIUM ACUTIPINNE*, Guich.

Cotylopus acutipinnis, Guich., in Mallard, Notes sur l'Isle de la Réunion, ii. Add. C, p. 10; Bleeker, Arch. Néerl. ix. p. 313.

D. $6\frac{1}{11}$. A. $\frac{1}{10}$. L. lat. ca. 56. L. trans. ca. 18.

Teeth in the upper jaw tricuspid, comparatively large. Gum beneath the upper lip smooth; no median papilla above the maxillary suture; no cleft in the upper lip; maxillæ contain an obtuse angle; horizontal teeth inconspicuous.

The total length of the body (without the caudal) is five and two thirds the length of the head; the height and width of the head are subequal and rather less than two thirds of the length; the height of the body is about one seventh of the total length. Scales strongly ctenoid on the sides of the body. Head, neck, and belly naked. The diameter of the eye is one fifth the length of the head; maxilla extends to the vertical from the anterior margin of the eye. The

length of the pectoral equals the length of the head; caudal large, one fifth of the total length. The last ray of the dorsal and anal fins is produced into a short filament, especially that of the former, which extends past the base of the caudal. Colour deep black, lighter on the sides and whitish on the belly; a black oblong spot on each scale, most distinct on the posterior part of the body; dorsal and anal fins black, with large spots of darker, and the latter with a black marginal band; pectoral grey, with a blackish edge; caudal black.

Hab. Bourbon.

One adult specimen. (We owe this specimen, determined by Guichenot, to the kindness of M. Vaillant.)

7. *SICYDIUM LATICEPS*, C. & V.

Sicydium laticeps, Cuv. & Val. xii. p. 177; Günth. Cat. Fish. iii. p. 93.

D. $6\frac{1}{11}$. A. $\frac{1}{10}$.

The height of the head is two thirds of the width. Teeth in the lower jaw subequal. Scales on the neck and belly nearly as large as the others. The third and fourth dorsal spines are produced into subequal filaments, half as high again as the body. Uniform blackish, caudal white-edged. The longest specimen measures four inches. (*C. & V.*)

Hab. Bourbon.

Anterior mandibular teeth larger than the following.

8. *SICYDIUM PUGNANS*, sp. n. (Plate XI. fig. 3 et XII. fig. 7.)

D. $6\frac{1}{10}$. A. $\frac{1}{10}$. L. lat. 60. L. trans. 15.

Teeth in the upper jaw bicuspid.

Gum beneath the upper lip smooth; no median papilla; edge of the upper lip saw-like; maxillæ contain a narrow angle of about 45° ; horizontal teeth conspicuous.

The length of the body (without the caudal) is four and four fifth times the length of the head; the width of the head is greater than the height and two thirds of the length. The height of the body is contained six and a half times in the length. Scales on the body and tail subequal, larger than those on the neck and belly. The diameter of the eye is one fifth of the length of the head and half the interorbital space. The length of the pectoral equals the length of the head. The dorsal spines are filiform; the fourth, which is the longest, is three times the height of the body; second dorsal higher than the body. Colour, body and fins olive-brown, belly bluish grey; seven dark blotches on the upper half of the body, two below the first dorsal, three below the second, one on the free part of the tail, and the last on the upper part of the root of the caudal; a deep black mark below the eye; second dorsal sometimes spotted with

brown; lower margin of the pectoral white-edged; caudal with a dark brown and white band on the upper and lower margins.

The largest specimen measures $2\frac{1}{2}$ inches.

Hab. Savaii.

Many specimens—adult, half-grown, and young.

9. SICYDIUM TÆNIURUM, Gthr.

Sicydium lagocephalum (non Pall.), Kuer, SB. Ak. Wien, lviii. p. 327.

Sicydium macrostetholepis, Günth. Cat. Fish. iii. p. 94.

Sicydium tæniurum, Günth. Fische der Südsee, p. 183, pl. cxii. fig. C.

D. $6\frac{1}{11}$. A. $\frac{1}{10}$. L. lat. 54. L. trans. 16.

Teeth in the upper jaw tricuspid.

A row of rather large tuberculous papillæ on the gum beneath the upper lip, with larger elongate median papilla above the maxillary suture; upper lip with a median cleft; maxillæ contain an angle of about 75° ; horizontal teeth conspicuous.

The total length of the body (without the caudal) is four and a half times the length of the head; the width and height of the head are subequal and two thirds of the length. The height of the body is contained four and three quarter times in the length. Scales subequal and rather large, except the first eight or ten rows on the occiput. The diameter of the eye is contained five and a half times in the length of the head and two and a half in the inter-orbital space. The length of the pectoral is greater than the length of the head; the length of the caudal is less than one fourth of the total length of the body. The third dorsal spine is produced into a filament one and a half times the height of the body. Colour, body and fins uniform brownish; second dorsal with several transverse rows of dots on the rays; caudal with dark horseshoe-like marginal band met by a second passing along its middle rays from the root.

The largest specimen measures $3\frac{1}{2}$ inches.

Hab. Aneiteum; Viti Levu.

Five adult specimens (types).

10. SICYDIUM LAGOCEPHALUM, Pall.

Gobius lagocephalus, Pall. Spicil. Zool. viii. p. 14, pl. 2. figs. 6-7.

Sicydium lagocephalum, Cuv. & Val. xii. p. 174; Günth. Cat. Fish. iii. p. 92; Kuer, 'Novara,' Fische, p. 181.

D. $6\frac{1}{11}$. A. $\frac{1}{10}$.

Teeth in the upper jaw tricuspid; a row of papillæ on the gum beneath the upper lip, with a larger median papilla above the maxillary suture; maxillæ contain an angle of about 75° .

Horizontal teeth conspicuous; upper lip with a median cleft.

The total length of the body is five and a half times the length of the head; the width and height of the head are equal. The

scales on the neck and belly are as large as the rest; those on the occiput very small. The diameter of the eye is contained four and a half times in the length of the head, one and a half in the interorbital space, and one and a half in the snout. The first dorsal is higher than the body; third and fourth spines are produced into short filaments. Colour brown, sometimes clouded with darker; fins brownish, except the ventral, which is whitish; second dorsal with four or five series of dark dots on the rays; anal with a black and white margin. Caudal with a dark horseshoe-like marginal band met by a second passing along its middle rays.

Hab. Mauritius and Bourbon.

One adult specimen.

11. *SICYDIUM ELEGANS*, Steind.

Sicydium elegans, Steindachner, SB. Ak. Wien, lxxx. p. 152.

B. $6\frac{1}{11}$. A. $\frac{1}{10}$. L. lat. 32-33.

(Teeth in the upper jaw tricuspid?)

The total length of the body is five times the length of the head. The width of the head is greater than the height and is two thirds of the length. The height of the body is about one sixth of the length. Scales on the neck and belly are rather smaller than the rest. The diameter of the eye equals the length of the snout and is nearly equal to the interorbital space; it is contained about $3\frac{1}{2}$ times in the length of the head. The first and second dorsals are higher than the body. The length of the pectoral is greater than that of the head and equal to the caudal. Colour light brownish-yellow; whitish on the belly, a dark brown band along the upper margin of the body, a second along the margin of the belly, and a third along the margin of the upper lip which loses itself between the eye and the base of the pectoral in small spots. The upper band extends along the side of the head to the snout in a horizontal line: above this, there is sometimes a third longitudinal band, which is joined to the corresponding one on the other side by a silver band which loses itself on the neck. All the fins with the exception of the ventral are transparent, spotted with violet. The spots on the caudal are larger than those on the other fins, and placed in oblique series.

Longest specimen 33 millim. long (*Steind.*).

Hab. Society Islands.

12. *SICYDIUM XANTHURUM*, Bleeker.

Sicydium xanthurum, Bleeker, Sumatra, ii. p. 271; Günth. Cat. Fish. iii. p. 93.

Sicyopterus (Sicydiops) xanthurus, Bleeker, Arch. Néerl. Sc. Nat. ix. p. 26; et Versl. Ak. Amst. (2) ix. p. 283.

D. $6\frac{1}{11-12}$. A. $\frac{1}{10-11}$. L. lat. 50. L. trans. 12.

(Teeth in the upper jaw tricuspid?)

A row of papillæ on the gum beneath the upper lip; horizontal teeth conspicuous.

The total length of the body (without the caudal) is about five times the length of the head; the width of the head is rather greater than the height and two thirds of the length. The height of the body is contained about six and a half times in the length. Scales on the neck and side nearly equal to those on the tail. The diameter of the eye is contained three and a half times in the length of the head, and equals the interorbital space. The maxilla extends to the vertical from the middle of the eye. The pectoral and caudal fins are rather longer than the head; the caudal is contained about five and a half times in the total length. The third dorsal spine is produced into a short filament higher than the body second dorsal higher than the body. Colour blackish violet, dorsal and anal fins dusky violet; pectoral greenish violet with an orange margin; caudal yellow, with a black horseshoe-like mark, and with the angles violet.

Total length $2\frac{1}{2}$ inches (*Bleek.*).

Hab. Rivers of West Sumatra and Bali.

13. SICYDIUM GYMNAUCHEN, Bleeker.

Sicydium gymnauchen, Bleeker, Act. Soc. Sc. Indo-Nederl. iii. Celebes, p. 11; Günth. Cat. Fish. iii. p. 95.

Microsicydium gymnauchen, Bleeker, Arch. Néerl. ix. p. 34; Versl. Ak. Amst. (2) ix. p. 284.

D. $6\frac{1}{9-10}$. A. $\frac{1}{10-11}$. L. lat. 40. L. trans. ca. 12.

(Teeth in the upper jaw tricuspid?)

Horizontal teeth conspicuous.

The total length of the body (without the caudal) is rather more than four times the length of the head; the width and height of the head are subequal and half the length. The height of the body is contained about six times in the length. Head and anterior portion of the trunk scaleless; scales on the rest of the body subequal. The diameter of the eye is about a quarter of the length of the head and equals the interorbital space. The length of the pectoral is rather less than the length of the head, which is about equal to the length of the caudal. The anterior dorsal is not so high as the body; the second dorsal and anal are subequal, higher than the first dorsal, their anterior rays being higher than the posterior. Colour green above, yellowish beneath, with eight blackish cross bands, broader than the intervening spaces; the last four or five are lighter than the rest and descend obliquely forwards; fins rose-coloured, anal dotted with black. (The bands are sometimes indistinct or absent.)

Out of more than 300 specimens the longest measures $1\frac{1}{3}$ inches (*Bleek.*).

Hab. Estuaries of Manado.

SICYDIUM, sp. n.?

Closely allied to *S. gymnanchen*, Bleek.

D. $6\frac{1}{11}$. A. $\frac{1}{10}$. L. lat. 54. L. Trans. 15.

Teeth in the upper jaw tricuspid.

No papillæ on the gum beneath the upper lip, no median papillæ, slight median notch in the upper lip; maxillæ contain a narrow angle about 45° , horizontal teeth conspicuous.

The total length of the body (without the caudal) is four and a half times the length of the head. The width and height of the head are subequal and half the length of the head. The height of the body is less than one sixth of the length. Scales subequal, rather large. The diameter of the eye is a quarter of the length of the head and is equal to the interorbital space. The length of the pectoral is less than the length of the head, which is equal to the length of the caudal. The first dorsal has none of its spines produced into filaments, and is equal to the height of the body. Second dorsal not so high as the body. Colour yellowish brown, a dark zigzag band along the upper half of the body. Membrane of the fins transparent; a dark **W**-shaped mark on the root of the caudal, and two transverse bands across the rays. The longest specimen measures $1\frac{1}{4}$ inch (32 millims.).

Hab. Samoa.

Nine young specimens.

14. SICYDIUM ALBO-TENIATUM, Gthr.

Sicydium albo-teniatum, Günth. Fische der Südsee, p. 185, pl. cx. fig. D.

This species is described from a drawing made by Mr. Garrett, who captured two specimens in the streams of the Sandwich Islands.

The formula of the fins appears to be:—

D. 6, 15. A. 18.

Colours, body olive-green, with a broad white band from the tip of the snout to the root of the caudal, and below it a longitudinal row of large dark and isolated spots; fins greyish, second dorsal, caudal, and anal with a pale blue margin, the latter being also spotted with blue along the base; pectoral with a light edge.

Hab. Sandwich Islands.

15. SICYDIUM MICRURUM, Bleek.

Sicydium micrurum, Bleeker, Amboina, v. p. 341; Günth. Cat. Fish. iii. p. 93.

Sicyopterus micrurus, Bleeker, Versl. Ak. Amst. (2) ix. p. 280.

D. $6\frac{1}{11}$. A. $\frac{1}{10}$. L. lat. 55-60. L. trans. ca. 15.

Teeth in the upper jaw tricuspid.

A row of tuberculous papillæ on the gum beneath the upper lip,

a small median papilla above the maxillary suture, upper lip with a slight median cleft; maxillæ contain an angle of about 60° ; horizontal teeth conspicuous.

The total length of the body (without the caudal) is four and two third times the length of the head; the width and height of the head are equal and two thirds of the length. The height of the body is about a quarter of the length. Scales rather large, those on the neck, belly, and tail being smaller than the rest. The diameter of the eye is contained five and a half times in the length of the head and about three in the interorbital space. The length of the pectoral equals the length of the head; the length of the caudal is about one sixth of the total length of the body. The third dorsal spine is produced into a short filament not so high as the body; second dorsal not so high as the body. Colour greenish above, with eight blackish cross bars; a blackish band along the side, most distinct on the base of the caudal and along its middle rays; dorsal and anal fins immaculate, the latter with a blackish intermarginal band; caudal with a black horseshoe-like mark; pectoral and ventral yellow.

Total length $3\frac{4}{10}$ inches.

Hab. Amboina.

One adult specimen.

16. SICYDIUM NIGRESCENS, Gthr.

Sicydium nigrescens, Günth. 'Challenger' Shore Fishes, p. 60, pl. xxvi. fig. C.

D. $6\frac{1}{10}$. A. $\frac{1}{10}$. L. lat. 80. L. trans. 16.

Teeth in the upper jaw tricuspid.

Gum beneath the upper lip smooth, no median papilla above the maxillary suture; no median cleft in the upper lip; maxillæ are at right angles to one another; horizontal teeth conspicuous. The length of the body (without the caudal) is four and a half times the length of the head; the width of the head is rather greater than the height. The height of the body is one fifth of the length. Scales on the occiput, anterior part of body and belly in irregular series and much smaller than those on the rest of the body. The pectoral is considerably, and the caudal much longer than the head. The diameter of the eye is one seventh of the length of the head and rather more than one third of the interorbital space. The first, second, and third dorsal spines are produced into filaments, the third, which is the longest, is nearly twice the height of the body; second dorsal higher than the body; the posterior rays are much produced, extending beyond the root of the caudal. Colour uniform brownish-black; vertical fins black; pectoral and ventral brown.

Total length nearly 5 inches.

Honolulu.

One adult specimen (type).

17. *SICYDIUM STIMPSONI*, Gill. (Plate XII. fig. 4.)

Sicyopterus stimpsoni, Gill, Proc. Ac. Nat. Sc. Philad. 1860, p. 101; Bleeker, Arch. Néerl. ix. p. 313.

Sicydium stimpsoni, Günth. Cat. Fish. iii. p. 93; Günth. Fische der Südsee, p. 183.

D. $6\frac{1}{10}$. A. $\frac{1}{10}$. L. lat. 70.

Teeth in the upper jaw tricuspid.

A row of rather large tuberculous papillæ on the gum beneath the upper lip, with a larger median papilla above the maxillary suture; upper lip with deep median cleft and two round lateral notches below the nostrils; maxillæ at right angles to one another; horizontal teeth conspicuous.

Head subquadrate, rather less than one fourth of the length of the body (without the caudal); width of the head rather greater than the height and two thirds of the length. The height of the body is more than one fifth of the length. The length of the pectoral is equal to the length of the head; length of the caudal greater. The diameter of the eye is one sixth of the length of the head and one third of the interorbital space. Scales on the middle of the trunk very large, much larger than those on the neck, belly, anterior part of the body, and tail. The third and fourth dorsal spines are produced into filaments; the third which is the longest, is more than twice the height of the body; second dorsal not so high as the body. Colour purplish, with from seven to ten darker cross bands; caudal and base of dorsal and anal white-dotted.

The largest specimen measures $3\frac{5}{8}$ inches.

Hab. Honolulu; Hawaii.

Four adult and half-grown specimens (types of *S. nigrescens*, juv.).

18. *SICYDIUM CYNOCEPHALUM*, C. & V.

Gobio pinna ventrali subrotunda, &c., Koelreuter, Nov. Comm. Petrop. ix. p. 428, pl. 9. fig. 3, 4.

Sicydium cynocephalum, Cuv. & Val. xii. p. 177, pl. 352; Bleeker, Batjan. ii. p. 201; et Natuurk. Tydschr. Ned. Ind. 1859, p. 156; Günth. Cat. Fish. iii. p. 94.

Sicydium lagocephalum (non Pall.), Bleeker, Natuurk. Tydschr. Ned. Ind. i. p. 250.

Sicydium parvei (non Bleek.), Günth. Cat. Fish. iii. p. 94.

Sicyopterus cynocephalus, Bleeker, Versl. Ak. Amst. (2) ix. p. 275.

D. $6\frac{1}{10-11}$. A. $\frac{1}{10-11}$. L. lat. 75-80. L. trans. ca. 17.

Teeth in the upper jaw tricuspid.

A row of small papillæ on the gum beneath the upper lip, a small median papilla above the maxillary suture; upper lip with a very slight median cleft; maxillæ contain an angle of about 60° ; horizontal teeth conspicuous.

The total length of the body (without the caudal) is four and a half times the length of the head; the width of the head is rather

greater than the height and about two thirds of the length. The height of the body is about one fifth of the length. Scales on the side larger than those on the tail, and much larger than those on the anterior part of the body and occiput. The diameter of the eye is one sixth of the length of the head and half the interorbital space. The maxilla extends to the vertical from the posterior margin of the eye. The length of the pectoral is greater than the length of the head; the length of the caudal is contained four times and one third in the total length of the body. The third dorsal spine is produced into a short filament rather higher than the body; second dorsal not so high as the body. Colour, body above deep violet or greenish violet, below whitish or yellowish, with six or seven broad oblique bands of darker more or less indistinct; dorsal and anal fins orange, second dorsal sometimes with large regular brown spots on the rays; anal with a broad violet margin. Caudal olive, with the superior and inferior edges yellow; pectoral yellow-edged.

The largest specimen measures $4\frac{9}{10}$ inches.

Hab. Moluccas; rivers of the East Indian Archipelago.

Three adult specimens.

19. SICYDIUM PARVEI, Bleeker.

Sicydium parvei, Bleeker, *Natuurk. Tydschr. Ned. Ind.* iv. 1853, p. 427.

Sicyopterus parvei, Bleeker, *Versl. Ak. Amst.* (2) ix. p. 277; et *Arch. Néerl.* ix. p. 313.

D. $6\frac{1}{10-11}$. A. $\frac{1}{10-11}$. L. lat. 70. L. trans. ca. 14.

(Teeth in the upper jaw tricuspid?)

A row of papillæ on the gum beneath the upper lip; horizontal teeth conspicuous.

The total length of the body (without the caudal) is about four and a half times the length of the head; the width of the head is rather greater than the height, and two thirds of the length. The height of the body is less than one fifth of the length. Scales on the nape, shoulder, and belly cycloid, rest ctenoid; those on the side rather larger than those on the tail, and much larger than those on the anterior parts. The diameter of the eye is a quarter or one fifth of the length of the head, and about half the interorbital space. The maxilla extends to the vertical from the middle of the eye. The length of the pectoral is greater than that of the head; the length of the caudal is about one fifth of the total length of the body. The third dorsal spine is rather higher than the body. Colour, body blackish-violet, becoming lighter below; caudal yellow, with a broad violet band round the margin; the other fins brownish-violet.

The largest specimen measures $4\frac{3}{4}$ inches (*Bleek.*).

Hab. Rivers of Garut, West Java.

20. *SICYDIUM MACROSTETHOLEPIS*, Bleeker.

Sicydium macrostetholepis, Bleeker, Sumatra, ii. p. 271; Kner, SB. Ak. Wien, lviii. p. 327.

Sicyopterus macrostetholepis, Bleeker, Versl. Ak. Amst. (2) ix. p. 281.

D. $6\frac{1}{11-12}$. A. $\frac{1}{10-11}$. L. lat. 50. L. trans. 14-15.

(Teeth in the upper jaw tricuspid?)

A row of papillæ on the gum beneath the upper lip; horizontal teeth conspicuous.

The total length of the body (without the caudal) is four and a half times the length of the head; the width of the head is greater than the height and three quarters of the length. The height of the body is rather more than one sixth of the length. Scales on the anterior part of the body much larger than those on the neck, posterior part of the body, and tail. Diameter of the eye is about one fifth of the length of the head, and rather more than half the interorbital space. The maxilla extends to the vertical from the posterior margin of the eye. The lengths of the pectoral, caudal, and head are subequal; the length of the caudal is contained about five and a half times in the total length. The second, third, and fourth dorsal spines are produced into short filaments; the third, which is the longest, is higher than the body. Second dorsal higher than the body. Colour blackish-green above, becoming lighter below. Five or six dark transverse bands on the back; fins brownish-purple; dorsal fins sometimes with numerous irregular black dots, anal with a black marginal band; caudal black-spotted with a horseshoe-like black mark; pectoral yellow-edged.

The largest specimen measures $4\frac{1}{10}$ inches (*Bleek.*).

Hab. Rivers of West Sumatra, Bali, Amboina, and Singapura.

21. *SICYDIUM FASCIATUM*, Day.

Sicydium fasciatum, Day, Journ. As. Soc. Beng. (n. s.) xliii. p. 31, et Fishes of India, p. 299, pl. lxiv. fig. 7.

D. $6\frac{1}{10}$. A. 11. L. lat. 67. L. trans. 19.

(Teeth in the upper jaw tricuspid?)

Horizontal teeth conspicuous.

The total length of the body (without the caudal) is four and a quarter times the length of the head; the width of the head is greater than the height, and rather less than two thirds of the length. The height of the body is contained four and a half times in the length. Scales strongly ctenoid, somewhat irregularly arranged; they extend forwards nearly as far as the eyes; those on the neck and belly smaller than the rest, and more or less cycloid. The diameter of the eye is contained four and a half times in the length of the head, once and three quarters in the interorbital space, and once and a half in the snout. The length of the pectoral and caudal is subequal, nearly as long as the head; the caudal is contained five

and a half times in the total length. Dorsal spines short, projecting above the membrane; the fourth, which is the longest, is not so high as the body; second dorsal not so high as the body. Colour reddish-brown, with about six vertical darker bands on the body, wider than the ground-colour; there are also some dark spots; its under surface is dirty yellowish brown; fins nearly black, with a light, nearly white edge.

The largest specimen measures $2\frac{1}{4}$ inches (*Day*).

Hab. Burmah.

22. SICYDIUM MICROCEPHALUM, Bleeker.

Sicydium microcephalum, Bleeker, Java, ii. p. 437; Günth. Cat. Fish. iii. p. 95.

Sicyopterus microcephalus, Bleeker, Versl. Ak. Amst. (2) ix. p. 278.

D. $6\frac{1}{10-11}$. A. $\frac{1}{10-11}$. L. lat. 60. L. trans. 15-16.

(Teeth in the upper jaw tricuspid?)

A row of papillæ on the gum beneath the upper lip; horizontal teeth conspicuous.

The total length of the body (without the caudal) more than five times the length of the head; the width of the head is greater than the height, and four fifths of the length. The height of the body is more than one sixth of the length. Scales on the occiput, neck, and anterior part of the body much smaller than the rest. The diameter of the eye is about one fourth the length of the head, and one half the interorbital space. The maxilla extends to the vertical from the anterior margin of the eye. The length of the pectoral is greater than the length of the head; the length of the caudal is one and a half times the length of the head, and is contained four and a half times in the total length. The second, third, and fourth dorsal spines are produced into subequal filaments considerably higher than the body; second dorsal higher than the body. Colour, body deep violet above, with longitudinal series of yellow spots, yellowish below; dorsal, caudal, and pectoral fins violet, irregularly dotted with black; pectoral yellow-edged. Anal orange-violet, with a dark marginal band.

The longest specimen measures $4\frac{1}{2}$ inches (*Bleek.*).

Hab. Rivers of Banten (Java); Celebes?

23. SICYDIUM GRISEUM, Day.

Sicydium griseum, Day, Journ. Linn. Soc. Zool. xiii. p. 140.

D. $6\frac{1}{10}$. A. 11. L. lat. 80. L. trans. ca. 25.

(Teeth in the upper jaw tricuspid?)

Horizontal teeth conspicuous.

The total length of the body (without the caudal) is four and three quarter times the length of the head; the width of the head equals the height. The height of the body is contained rather more than five times in the length. Scales strongly ctenoid, of irregular

sizes and shapes, and in irregular series. The diameter of the eye is one fourth of the length of the head, and about one half the interorbital space. The length of the caudal is less than the length of the head. Dorsal spines filiform, and projecting beyond the membrane. Colours brownish, with eight or nine rings of a darker tint surrounding the body and wider than the ground-colour; fins dark, especially at the edges.

The largest specimen measures 3 inches (*Day*).

Hab. South Canara.

24. SICYDIUM PARVIPINNE, Guich.

Cotylopus parvipinnis, Guich., in Maillard, Notes sur l'Ile de la Réunion, ii. Add. C, p. 11.

D. $7\frac{1}{10}$. A. $\frac{1}{10}$.

Horizontal teeth inconspicuous.

The height of the body is contained five and three quarter times in the total length (without the caudal). Belly naked. The diameter of the eye is more than one fifth of the length of the head, and is one half the interorbital space; maxilla does not extend to the vertical from the anterior margin of the eye. The length of the pectoral is equal to the length of the head, and less than that of the caudal, which is one sixth of the total length. The second dorsal is about as high as the body; its rays extend above the membrane, the last being slightly produced into a point. Colour pale yellow, greyish on the belly; each scale with a brown border and a black central spot; dorsal and anal fins yellow, spotted with brown, the latter also with a black marginal band; pectoral yellow, brownish towards the extremity; caudal brownish yellow.

Total length $4\frac{2}{5}$ inches (*Guich.*).

Hab. Bourbon.

LENTIPES, Gthr.

Sicyogaster, Gill, Proc. Ac. Nat. Sc. Philad. 1860, p. 102 (non Barnw.).

Lentipes, Günth. Cat. Fish. iii. p. 96; Bleeker, Arch. Néerl. ix. p. 314; et Versl. Ak. Amst. (2) ix. p. 271; Günth. Fische der Südsee, p. 184; et Challenger Shore Fish. p. 61.

Body subcylindrical, naked, or with the posterior part covered with cycloid scales. Head oblong broad and depressed, with the cleft of the mouth horizontal, or very nearly so. Jaws subequal; snout obtusely rounded; lips not very thick, the lower with a series of numerous, short, pointed, horizontal teeth. A single series of fixed teeth in both jaws; the anterior ones in the upper jaw are closely set and tricuspid, ankylosed to groove on the superior surface of the maxilla, those more remote and those in the lower jaw widely set, simple and conical. Behind the tricuspid teeth in the upper jaw, lie several series of young teeth hidden in the gum, which succeed the former teeth as they become worn out or broken. Eyes of moderate size. Two dorsals, the anterior with six flexible

spines; caudal quite free, ventrals united into a short disk, adherent to the belly. Gill-openings of moderate width; four branchiostegals.

Hab. Rivers of the Sandwich Islands.

Synopsis of Species.

- I. Body naked, ca. 10 tricuspid teeth on each side of the maxillary suture 1. *L. concolor*.
 II. Tail covered with small cycloid scales; ca. 16 tricuspid teeth on each side of the maxillary suture 2. *L. seminudus*.

1. LENTIPES CONCOLOR, Gill. (Plate XII. fig. 9.)

Sicyogaster concolor, Gill, P. Ac. Nat. Sc. Philad. 1860, p. 102.

Lentipes concolor, Günth. Cat. Fish. iii. p. 96; et Fisch. der Südsee, p. 184, et Challenger Shore Fish. p. 61.

D. $6\frac{1}{10}$. A. $\frac{1}{9}$.

The upper jaw has ten or eleven tricuspid, and about three conical teeth on each side of the maxillary suture. Upper lip with a median notch.

The total length of the body (without the caudal) is rather more than four times the length of the head; the height of the head is two thirds of the width, and the width the same proportion of the length. The height of the body is contained about seven and three quarter times in the length. Scales none. The diameter of the eye is one sixth of the length of the head, and one half the interorbital space. The length of the pectoral is less than, and the length of the caudal equal to, the length of the head. The caudal is contained rather more than five times in the total length. The fifth dorsal spine is slightly produced. Both first and second dorsal fins are rather higher than the body; the latter has its origin considerably in front of the anal. Colour uniform purplish, becoming almost yellowish on the tail. Anal fin with a darker marginal band.

Total length $3\frac{4}{5}$ inches.

Hab. Streams of Hawaii.

One adult specimen.

2. LENTIPES SEMINUDUS, Günth. (Plate XII. fig. 10.)

Lentipes seminudus, Günth. Challenger Shore Fish. p. 61.

D. $6\frac{1}{10}$. A. $\frac{1}{9}$.

The upper jaw has 15-16 tricuspid, and about two conical teeth on each side of the maxillary suture; upper lip with a slight median notch.

The total length of the body (without the caudal) is four and a half times the length of the head; the width of the head is considerably greater than the height, and is two thirds of the length. The height of the body is less than one sixth of the length. The tail is covered with small cycloid scales. The diameter of the eye is one fifth of the length of the head, and more than one half the